

MA 440 Homework

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1. Congress is working on a homeland security spending bill. Congress wants the bill to include \$10 million for each member's district for "important projects." The President wants the bill to include \$100 million to upgrade his airplane, Air Force One, to the latest model, Air Force One Extreme. The President can sign or veto any bill that Congress passes.

Congress's payoffs are 1 if it passes a bill (voters like to see Congress take action), 2 if the President signs a bill that contains money for important projects, and -1 if the President signs a bill that contains money for Air Force One Extreme. Payoffs are added; for example, if the President signs a bill that contains money for both, Congress's total payoff is $1 + 2 + (-1) = 2$.

The President's payoffs are -1 if he signs a bill that contains money for important projects, and 2 if he signs a bill that contains money for Air Force One Extreme. His payoffs are also added.

The following game tree illustrates the situation. In the tree, C = Congress, P = President; N = no bill passed, I = important projects passed, A = Air Force One Extreme passed, B = both passed; S = President signs the bill, V = President vetoes the bill. The first payoff is Congress's, the second is the President's.

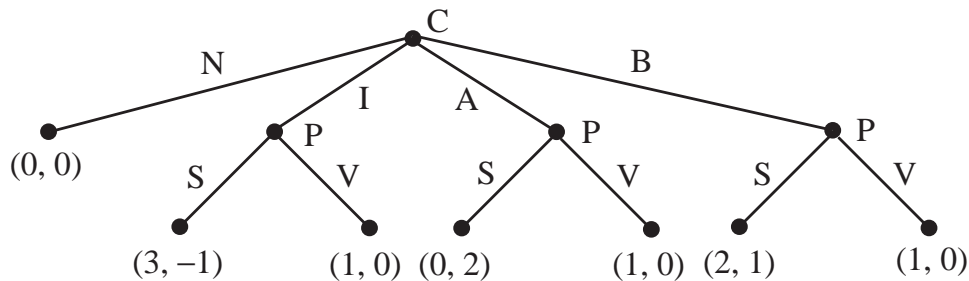


Figure 1:

- (a) Use backward induction to predict what will happen.
 - (b) Suppose the Constitution were changed so that the President could veto parts of bills he doesn't like but still sign the rest. Draw the new tree and use backward induction to predict what will happen. (The only change in the game is that if Congress passes a bill containing both important projects and Air Force One Extreme, the President will have four choices: sign, veto, sign *I* but veto *A*, sign *A* but veto *I*.)
2. On March 1, 1974, a grand jury indicted seven former aides to U.S. President Richard Nixon for attempting to cover up White House involvement in a burglary of Democratic National Committee at the Watergate complex in Washington. On April 18, the judge in the case, John Sirica, issued a subpoena for tapes of President Nixon's conversations with the defendants. The President's attorney, James St. Clair, attempted to delay responding to the subpoena. The prosecutor, Leon Jaworski, then used an unusual procedure to appeal directly to the Supreme Court and request that the Court order the President to supply the tapes. The Court heard oral arguments on July 8, and the justices met on July 9 to decide the case.

One justice, William Rehnquist, withdrew from the case, probably because he had worked in President Nixon's Justice Department. Of the remaining eight justices, six quickly agreed to uphold the prosecutor's request. Two justices, Warren Burger and Harry Blackmun, were reluctant to uphold the prosecutor's request, because they thought his direct appeal to the Supreme Court was improper.

Also on July 9, President Nixon's attorney said that the President had "not yet decided" whether he would supply the tapes if the Supreme Court ordered him to. This statement was probably intended to pressure the Court into backing down from the confrontation. At minimum, it was probably intended to encourage some justices to vote against upholding the prosecutor's request. If the vote was split, the President could argue that it was not sufficiently definitive for a matter of this magnitude. Jaworski believed that in the event of a split vote, the President would "go on television and tell the people that the presidency should not be impaired by a divided Court."

We will regard this as a two-player game. Player 1 is Justices Burger and Blackmun, whom we assume will vote together; we therefore treat them as one player. Player 2 is President Nixon.

First, Justices Burger and Blackmun decide how to vote. If they vote to uphold the prosecutor's request, the result is an 8-0 Supreme Court

decision in favor of the prosecutor. If they vote to reject the prosecutor's request, the result is a 6-2 Supreme Court decision in favor of the prosecutor.

After the Supreme Court has rendered its decision, President Nixon decides whether to comply by supplying the tapes, or to defy the decision.

President Nixon's preferences are as follows:

- Best outcome (payoff 4): 6-2 decision, President defies the decision.
- Second-best outcome (payoff 3): 6-2 decision, President supplies the tapes.
- Third-best outcome (payoff 2): 8-0 decision, President supplies the tapes.
- Worst outcome (payoff 1): 8-0 decision, President defies the decision.

Explanation: The President's best outcome is a divided decision that he can defy while claiming the decision is not really definitive. His worst outcome is an 8-0 decision that he then defies; this would probably result in immediate impeachment. As for the two intermediate outcomes, the President is better off with the weaker vote, which should give him some wiggle room.

Justices Burger and Blackmun's preferences are as follows:

- Best outcome (payoff 4): 6-2 decision, President supplies the tapes.
- Second-best outcome (payoff 3): 8-0 decision, President supplies the tapes.
- Third-best outcome (payoff 2): 8-0 decision, President defies the decision.
- Worst outcome (payoff 1): 6-2 decision, President defies the decision.

Explanation: In their best outcome, Burger and Blackmun get to vote their honest legal opinion that the prosecutor's direct appeal to the Court was wrong, but a Constitutional crisis is averted because the President complies anyway. In their second-best outcome, they vote dishonestly, but they succeed in averting a major Constitutional crisis. In their third-best outcome, the crisis occurs, but because of the strong 8-0 vote, it will probably quickly end. In the worst outcome, the crisis

occurs, and because of the weak vote, it may drag out. In addition, in the last outcome, the President may succeed in establishing the principle that a 6-2 Court decision need not be followed, which no member of the Court wants.

- (a) Draw a game tree and use backward induction to predict what happened.
- (b) Can you think of a plausible way that President Nixon might have gotten a better outcome?

(What actually happened: the Court ruled 8-0 in favor of the prosecutor on July 24. On July 30, President Nixon surrendered the tapes. In early August, a previously unknown tape recorded a few days after the break-in was released. It documented President Nixon and his aide Robert Haldeman formulating a plan to block investigations by having the CIA claim to the FBI (falsely) that national security was involved. On August 9, President Nixon resigned.)

3. Three pirates must divide 100 gold doubloons. The doubloons cannot be cut into pieces.

Pirate A is the strongest, followed by Pirate B, followed by Pirate C.

Because of ancient pirate tradition, the coins are divided in the following manner. First Pirate A proposes a division of the coins. The three pirates then vote on whether to accept the proposed division. If the proposal gets a majority vote, it is accepted, and the game is over. If the proposal fails to get a majority vote, Pirate A is executed.

It is then Pirate B's turn to propose a division of the coins between the two remaining pirates. The same rules apply, with one exception: if the vote is a tie (which can happen this time because the number of pirates is now even), Pirate B, being the strongest remaining pirate, gets an additional vote to break the tie.

Use backward induction to figure out what Pirate A should propose. You don't have to draw a game tree if you don't want to, but you do have to explain your thinking so I can follow it.